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ABSTRACT

In the 1973-74 North Carolina State Assessment approximately 2,500 third-graders took a health test and a physical education test. The students were randomly selected to represent the third-grade population in the state as a whole and in the three geographic regions: Mountains, Piedmont, and Costal Plains. Both sexes were about evenly represented. About 70 percent were white and 30 percent nonwhite, reflecting the overall racial composition of the state. The health test covered a variety of major health areas such as food and nutrition, dental care, first aid, safety, personal care, growth and development, mental health, and environmental health. Motor performance was measured by the physical education test. Softballs and balance beams replaced papers and pencils as third graders participated in a variety of physical activities: shuttle run, wall rebound, standing broad jump, balance walk, and throw for distance. No conclusions are drawn about the health test performance because of its experimental nature and the absence of solid criteria for judging good performance. Results of the physical education test are presented by state, region, race, sex, family income level, and parental education level. Again, no conclusion were drawn due to the lack of standards of acceptable motor performance. The two tests are appended. (RC)

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GRADE 3

HEALTH AND PHYSICAL EDUCATION

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STATE ASSESSMENT OF EDUCATIONAL PROGRESS IN NORTH CAROLINA, 1973-74

DIVISION OF RESEARCH / NORTH CAROLINA DEPARTMENT OF PUBLIC INSTRUCTION / RALEIGH 27611

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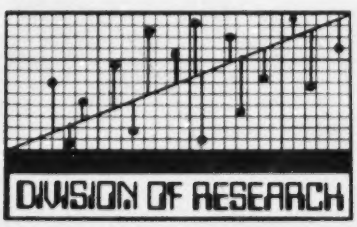
GRADE 3

HEALTH AND PHYSICAL EDUCATION



STATE ASSESSMENT OF EDUCATIONAL PROGRESS IN NORTH CAROLINA, 1973-74

DIVISION OF RESEARCH / NORTH CAROLINA DEPARTMENT OF PUBLIC INSTRUCTION / RALEIGH 27611

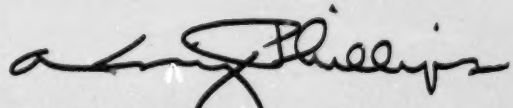
December, 1974

FOREWORD

As one of the ways to improve the quality of public education in the State, personnel in the State Department of Public Instruction conduct an annual assessment of educational performance. This assessment provides educational decision makers with accurate and objective information for planning and administering the State's public elementary and secondary schools.

This year, a series of reports will be released on the performance of third-grade students. The reports will include reading, mathematics, language arts, social studies, science, cultural arts, health, and physical education. Also, special surveys on teachers' and principals' opinions of education will be released. All of this information should also help the general public to be better informed about the status of their schools on a statewide basis.

Aware of the fact that patrons and educators at the local school level also wish to know more about the quality of education in their schools, the State Department of Public Instruction is initiating a program to assist local school personnel to conduct assessment programs. Constructive use of this information, as well as statewide data, will insure continuing progress in providing appropriate learning experiences for all children and youth in North Carolina.



State Superintendent
of Public Instruction

ACKNOWLEDGMENTS

In any major comprehensive effort such as the current Statewide Assessment of Education, it is impossible to recognize all individuals and groups who have made significant contributions. It is appropriate, however, to recognize a number of groups and agencies that have provided major services in this effort.

Were it not for the support of the members of the State Board of Education, funds and other resources would not have been allocated for the assessment program. The leadership provided by members of the Board is especially appreciated.

Special acknowledgments go to the personnel in the local school systems who cooperated and assisted with the assessment effort. The superintendents, the support staff, the principals, and the teachers proved to be accommodating and professionally dedicated in every respect. Their assistance was invaluable.

The Research Triangle Institute should be highly commended for assistance provided in several technical areas of the assessment.

The staff members from the Divisions of Reading, Language Arts, Mathematics, Science, Cultural Arts, Social Studies, and Health and Physical Education were vitally involved in the selection and development of tests for the assessment. Without their efforts, the comprehensiveness of the assessment would have been severely limited.

Finally, special appreciation is expressed to staff members in the Division of Research who successfully coordinated and completed this major assignment in a most efficient manner.

Wm. J. Brown Jr.

Director of The
Division of Research
Department of Public Instruction

H. T. Corner

Assistant Superintendent for
Research and Development
Department of Public Instruction

PREFACE

As part of his total effort to initiate better management techniques, the State Superintendent of Public Instruction indicated in 1970 that more and better information was needed for state-level planning. He initiated the State Assessment of Educational Progress in response to that need.

The assessment program was a collaborative effort from the beginning. Many levels of the education community contributed suggestions. Funds and services for the program were obtained from local, state, and federal sources. Cooperation among local and state components of the public school system and the nationally respected Research Triangle Institute was the backbone of the assessment. There was an open exchange of ideas, experiences, and services.

As a result of these cooperative relationships, the first State Assessment of Educational Progress took place in the spring of 1972 with minimal disruption to school programs. A statewide sample of sixth graders participated by completing exercises in reading, mathematics, language arts, career awareness, and several dimensions of student attitudes.

At the recommendation of the State Board of Education, the 1973 Legislature voted to fund the assessment program annually as part of the budget of the State Superintendent of Public Instruction. Concurrently, an advisory committee of legislators, businessmen, students, parents, and educators was formed to assist the State Board and the State Department of Public Instruction on aspects of statewide assessment and accountability.

A three-year cycle of assessment in grades three, six, and nine was established, beginning in 1974 with the State Assessment at the third grade. In the 1974 assessment, information was collected from teachers and principals as well as students. Student performance measures were taken in language arts, mathematics, cultural arts, reading, science, social studies, health, and physical education. Reports are now being prepared on the results.

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CHAPTER ONE: INTRODUCTION

Purpose of the Assessment

In order to improve educational planning and decision-making in North Carolina, the State Department of Public Instruction initiated a statewide assessment of educational progress. The information gathered through this assessment operation has three basic purposes:

1) To examine the state's present educational position: Knowing the educational status will enable educators to plan better programs for improving learning and teaching. Objective information will help decision-makers set program priorities with more assurance and allocate resources on the basis of need. An accurate description of the current status will increase general public knowledge and understanding about the public schools.

2) To measure educational progress over a period of years: As time passes, a charting of the educational progress in this state can be made. These benchmarks of educational quality could become the basis for educational accountability for the state.

3) To seek means of improving North Carolina's education: As more information is collected in the state assessments, variables which affect learning can be examined, and those variables which show a positive influence on learning can be promoted.

In addition, the state assessment effort provides local units with technical assistance in planning similar local programs which aid the setting of local priorities. Goals may be set using meaningful state and regional norms which are made available from the statewide effort. Furthermore, assessment information collected in each school will assist teachers in planning better instructional programs for public school youngsters and help patrons and parents to better understand the educational needs and attainments of North Carolina children.

In a continuing attempt to develop and improve North Carolina's assessment program, the Legislature, adding its encouragement through program support, approved funds in 1973 as a part of the State Superintendent's program budget to underwrite the statewide assessment effort. This State Assessment at the third-grade level is the first stage in a proposed three-year assessment cycle. In 1974-75, assessment will occur in the sixth grade, and, in 1975-76, at the ninth-grade level.

Implementation of the Assessment

The Sample

Selecting third graders to participate in the assessment program was the responsibility of the Research Triangle Institute, assisted by the State Department of Public Instruction. The objective was to choose a representative sample of size sufficient to provide reliable estimates of test score averages for the state, the Coastal Plains, the Piedmont, and the Mountains. Independent samples of 2,500 students were considered appropriate for each of the areas described in the section entitled "Assessment Areas." The total third grade enrollment of the eighteen schools containing 1970-71 state-supported kindergartens provided approximately 2,000 students for a special assessment follow-up.

A two-stage sampling procedure was designed to select the 12,500 students for the first five areas. In order to give each third grade student in North Carolina an equal chance of being chosen, 618 schools were randomly selected with the probability of school selection based upon stratification according to the size of the third-grade enrollment.

Random selection of students within schools was controlled to preserve the proportion of ESEA Title I enrollment within the third-grade class.

Of the 93,752 third-grade students in North Carolina, the chance of selection for any child was ten out of seventy-four.

Pupil characteristics of the third-grade State Assessment sample are shown in Table 1.

TABLE 1

PUPIL CHARACTERISTICS OF THE THIRD-GRADE ASSESSMENT SAMPLE

Characteristic	State Assessment Sample
Sex	
. Male	51.3%
. Female	48.5%
Racial/Ethnic Membership	
. American Indian	1.2%
. Black	29.0%
. White	69.0%
Parental Education Level	
. Neither over eighth	5.9%
. One over eighth	25.9%
. One high school graduate	44.8%
. One over high school	23.5%
Family Income Estimate	
. Less than $3,000	15.4%
. $3,000 - $15,000	75.6%
. Over $15,000	8.1%
Any Kindergarten Experience	
. Yes	39.2%
. No	53.4%
. Unknown	6.8%

Field Procedures

An Assessment Coordinator was designated by the superintendent of each participating LEA to organize all assessment activities. The activities included: (1) selecting and coordinating the testing schedule, (2) distributing and collecting test packages and questionnaires, and (3) providing information and assistance to the test administrators and principals. With the approval of the superintendent, Assessment Coordinators also selected someone other than the student's classroom teacher to administer the tests. These administrators read aloud all items which did not test the student's ability to read. To insure standardization of test procedures, the Division of Research staff held workshops to acquaint coordinators and administrators with assessment procedures.

Assessment Areas

The 1973-74 State Assessment of Educational Progress consisted of five different assessment areas and an additional research package for the evaluation of third graders who had previously attended state-supported kindergarten. In addition to student measures, all teachers (grades K-6) and principals of the 618 schools included in the student sample were asked to respond to questionnaires designed to reflect their opinions about the educational needs and priorities in North Carolina.

The subjects included in the six assessment areas and the type of testing involved are listed in Table 2.

TABLE 2

OVERVIEW OF 1973-74 ASSESSMENT AREAS, TESTING, AND SAMPLING

Assessment Area	Type of Testing	Number of Students Sampled
Reading, Math, Language Arts	Norm-Referenced (Iowa Tests of Basic Skills)	2,500
Reading, Math, Language Arts	Objective-Based	2,500
Health Physical Education	Objective-Based Motor Performance	2,500
Cultural Arts	Perception Survey	2,500
Science and Social Studies	Objective-Based	2,500
Third-Grade Kindergarten Follow-up	Norm-Referenced (Iowa Tests of Basic Skills) (Cognitive Abilities Test) (Self Observation Scale)	2,000

Types of Instruments

Reading, language arts, and mathematics were each assessed by both a norm-referenced test (Iowa Tests of Basic Skills) and an objective based test developed at the state level. The difference in the kinds of information provided by the two types of measurements should be considered when interpreting test results.

Nationally standardized achievement tests, such as the Iowa Tests of Basic Skills, are designed to provide information about student performance in given subject areas in relation to the performance of other students who are representative of the nation as a whole. The national sample of students taking the ITBS is the "norm" or reference group to whose

performance we compare our state results. Thus, the ITBS provides information on the educational status of North Carolina third-grade students in relation to the performance of a national sample of "typical" third graders. Such standardized tests also assume a continuum of achievement skills based upon the scores of the national sample. North Carolina's third-grade results may be considered against this continuum.

Norm-referenced tests are designed to spread out developmental scores on a continuum of skills spanning several grade levels. However, they do not tell us specifically what our students have achieved or how they perform on a given set of educational tasks. Some items on the ITBS can admittedly be grouped into subject area objectives, but the test is not designed for diagnostic purposes.

Therefore, objective-based tests were developed for reading, language arts, mathematics, and several other areas in order to assess more specific knowledge of North Carolina's students. Program area specialists and researchers collaborated on this review and selection process. Questionnaires were developed, information gathered, standardized tests carefully reviewed, and objectives and items finally selected in accord with some of the major educational goals of North Carolina.

Objective-based tests, also known as criterion-referenced tests, are developed differently from norm-referenced tests. They facilitate assessing the extent to which students have learned some defined behavior domain or specific class of learner skills. These behavior domains are also referred to as objectives. Specific objectives considered important or crucial for later skills are selected for each subject area. Then, item selected to measure these objectives determine how well students have learned the knowledge or behavior described by the objectives. Objective-

based tests are thus diagnostic of specific learning, rather than more broadly comparative in nature - as are the norm-referenced tests. Strengths and weaknesses of a group of students for a given subject area are thus determined, and sometimes, though not necessarily, in relation to a norm group.

It is important in making educational program decisions to know specifically what students have learned as well as how they are generally performing in relation to other students. For this reason, the assessment of third graders included experimental objective-based tests for various subject areas. Norm-referenced and objective-based tests when combined should provide a more complete picture of the performance of North Carolina students.

In the 1973-74 State Assessment, other kinds of instruments besides norm-referenced and objective-based tests were also used to gauge student performance. For example, the physical education instrument was a motor performance test, in which students participated in a variety of physical activities. That test was based neither on national norms nor on specific objectives.

In addition to student performance tests, other instruments were used in the North Carolina assessment. Tests were developed on student perceptions in some subject areas (such as cultural arts), and a survey of teachers' and principals' needs was taken. The assessment staff also acquired school and community information on variables known to be associated with achievement.

North Carolina Comparisons with Other States

Because learning does not stop at the end of the school day, it is helpful to review the environment in which this out-of-school learning occurs. North Carolina, the twelfth most populous state in the nation,

has been described as a "state of magnificient variety." The agriculture and industry of North Carolina are varied. The state produces two-thirds of the country's flue-cured tobacco and is a leader in fabric and furniture manufacture. Tourism also flourishes in North Carolina as thousands annually visit its mountains, parks, golf courses, shores, and sites for boating and fishing. Clearly, such diversification makes it difficult to describe the "typical" North Carolinian.

The diversity continues when such variables as individual income, occupation, race, and education are considered. These factors and the values placed on them vary not only by county and region, but within communities as well.

In studying educational status and change over time, it is essential to examine achievement in conjunction with environmental factors. Of these elements, socioeconomic factors, in particular, are associated with educational opportunity and attainment, and these exert a major influence on a child's growth and development. Educators must consider these tangibles and, more importantly, the values and ethics implicit in a child's immediate environment. The remainder of this section will contrast the environment of the North Carolina pupil with the environment of pupils in other states.

A state's population, size, and population distribution are basic environmental factors. The following tables show North Carolina's relative ranking.

TABLE 3

NORTH CAROLINA'S RANK AMONG THE FIFTY STATES
ON BASIC DEMOGRAPHIC FACTORS

Factor	North Carolina's Rank
Land Area (1970)	29
Population (1973)	12
People Per Square Mile (1970)	17
Percentage Classified Rural (1970)	5
Percentage Black (1970)	6
Median Age (1970)	15

As evident here, North Carolina students are from a more populous state where the people are younger, more likely to be of a minority group, and live in smaller towns than people in most states. It is also apparent that the degree of rurality is twice that of the national average while the density is slightly above average.

TABLE 4

NORTH CAROLINA'S RANK AMONG THE FIFTY STATES
ON BASIC SOCIOECONOMIC FACTORS

Factor	North Carolina's Rank
Per Capita Income (1972)	34
Households With Cash Incomes of $3,000 or less (1972)	12
Per Family Income (1970)	40
Median Years of Education (1970)	46

North Carolina's students do not share in as much of the basic socioeconomic wealth as do students from other states. That is, North Carolina ranks among the lowest ten states on important characteristics such as income and education level of adults.

Thus, North Carolina's combination of factors associated with income, ethnic composition, degree of rurality, and adult education level seem to indicate a "non-typical" background for her youth. A picture emerges of an environment which may not reinforce maximum educational progress.

Comparisons within North Carolina

There are great variations within the boundaries of North Carolina. Particularly important is the variety which exists with the differing traditions and personalities of its Mountain, Piedmont, and Coastal Plains groups. The following table describes some of these differences:

TABLE 5

GENERAL ENVIRONMENTAL FACTORS WITHIN NORTH CAROLINA

Factor	Mountains	Piedmont	Coastal Plains	State
Population (1970)	760,760 (15%)	2,692,975 (54%)	1,628,323 (32%)	5,082,059
Growth (1960-1970)	11%	21.3%	7.7%	11.5%
Distribution of Black Population (1970)	41,459 (4%)	569,575 (51%)	515,444 (46%)	1,126,478
Percentage Black (1970)	5.4%	21.1%	31.6%	22.2%
Percentage Classified Rural (1970)	75.1%	45.9%	60.6%	55.0%
Percentage That Moved (1965-70)	40.5%	46.0%	49.2%	46.2%

These basic environmental factors indicate that a majority of the people - black and white - live in the Piedmont; the Mountains have the highest percentage of the people living in rural areas; and the Coastal Plains population has a greater proportion that is black. Perhaps the major point in these figures is the variety among these three major geographical divisions. As disclosed earlier, some of these same variables have been shown to be related to achievement.

Distribution of economic resources in these three regions also varies, as the following table shows:

TABLE 6

SOCIOECONOMIC FACTORS WITHIN NORTH CAROLINA

Factor	Mountains	Piedmont	Coastal Plains	State
Family Income	8,059	10,234	7,757	9,139
Family Income Female Head (1970)	5,017	5,620	4,104	5,017
Average Percentage Free School Lunch	35.2%	37.6%	64.7%	47.8%
Percentage Living Below Poverty	20.2%	15.1%	28.8%	20.3%
Percentage of all Families Below Poverty with Children Under 18	10.7%	8.9%	19.2%	12.3%
Percentage of all Children Under 18 From Poverty Families	20.5%	17.4%	34.4%	23.6%
Percentage of Children Under 18 Living with Both Parents	82.6%	80.1%	73.7%	78.3%

Because socioeconomic status is a strong predictor of academic success, regional differences in educational achievement are to be expected. Thus, any academic comparisons should be carefully tempered by these background differences.

Still another factor associated with academic achievement is the educational environment. Regional patterns are suggested in the table below:

TABLE 7

EDUCATIONAL FACTORS WITHIN NORTH CAROLINA

Factor	Mountains	Piedmont	Coastal Plains	State
Average of Median Years of Education - Adults Over 25	9.5	10.2	9.9	10.6
Adult Education Index	2.50	2.82	2.56	2.69
Percentage of High School Graduates of Those 16-21 Not In School	49.7%	48.7%	44.0%	46.7%
Taxing for Education Index	417	507	439	478

These environmental, socioeconomic, and educational factors are a major influence on a child's educational growth and development. Educators who consider regional comparisons must be aware of the differential effects that these factors contribute within regions. Certainly, expectations are better determined with an awareness of the status of these variables, regardless of whether local, regional, or state comparisons are being made.

HIGHLIGHTS OF RESULTS FROM HEALTH ASSESSMENT

Approximately 2,500 third graders from across the state took the experimental Health Test as part of the 1973-1974 State Assessment of Educational Progress in North Carolina. The test covered many health areas, such as food and nutrition, dental care, first aid, safety, personal care, growth and development, mental health, and environmental health. Most of the items dealt with students' knowledge, but there were also questions about habits and attitudes. Some of the major findings were as follows:

- Over half (54 percent) of the students correctly answered at least seven of the eight items related to food and nutrition knowledge, while almost one-fourth (23 percent) answered all eight correctly.

- Over half (58 percent) of the students correctly answered at least five of the six items measuring dental care knowledge, and over one-fourth (28 percent) answered all six correctly.

- Of the two items measuring first aid knowledge, at least one item was correctly answered by 73 percent of the students; both items were correctly answered by just 16 percent.

- There were two groups of nine items each dealing with knowledge of safety principles. In the two groups of safety knowledge items, 20 percent and 30 percent of the students answered at least eight of the nine items correctly. Four percent and eight percent of the students answered all nine of the questions correctly in the two sets of items.

- Twenty-two percent of the students correctly answered at least five of the six items concerning growth and development knowledge, while just one percent correctly answered all six items.

- At least one of the two items measuring environmental health knowledge was correctly answered by 97 percent of the students, while both items were correctly answered by 80 percent of the students.

- Of the 10 mental health items (nine of which concerned mental health attitudes), at least nine were answered desirably by 18 percent of the students; all 10 were answered desirably by four percent.

- Seventy-nine percent of the students selected the desirable answers for at least two of the three items on food and nutrition habits, while 43 percent chose all three desirable answers.

- In the area of dental care habits, 72 percent desirably answered at least three of the four items, and 44 percent answered all four items desirably.

- Ninety-seven percent of the students selected the desirable responses for at least one of the two safety-habits items; 74 percent answered both items in the preferred way.

- Of the two items concerning personal care habits, at least one was desirably answered by 99 percent of the students; both were desirably answered by 78 percent of the students.

- Fifty-seven percent of the students desirably answered at least two of the three items dealing with habits of growth and development. Seventeen percent chose the preferred answer for all three items.

- White third graders generally answered more items correctly than did black students.

- White females scored higher than any race-by-sex group on all but one of the habit-related sets of items (food habits).

- There were many race-by-sex differences on the knowledge items, but no consistent race-by-sex patterns emerged across groups of knowledge items.

- For most areas on the Health Test, the greater the family income, the better the students' achievement. Personal care habits and growth and development habits were the only areas in which student achievement was not clearly associated with family income.

- The degree of the parents' formal education was closely related to the students' performance in all Health Test areas except personal care habits, growth and development habits and knowledge, and mental health attitudes.

- Regional differences in achievement were generally slight. However, the Mountain region usually performed the best, followed by the Piedmont region and then by the Coastal Plains region. On two groups of items (personal care habits and growth and development habits), the trend was reversed: the Coastal Plains achieved highest, then the Piedmont, then the Mountains. It is interesting that those two sets of items were the only sets in which achievement was not directly associated with family income.

CHAPTER TWO: HEALTH ASSESSMENT

For the first time, the State Assessment of Educational Progress in North Carolina has included the area of health. In the 1973-74 State Assessment, approximately 2,500 third-graders were tested on their health knowledge, habits, and attitudes. The same sample of students took the Physical Education Test, which will be described in Chapter Three. These students were randomly selected to represent the third-grade population in the state as a whole and in the three geographic regions: Mountains, Piedmont, and Coastal Plains. Both sexes were about evenly represented. About 70 percent were white and 30 percent non-white, reflecting the overall racial composition of the state.

Description of the Health Test

Questions about tooth decay, kites, and cigarettes were part of a wide range of items on the third-grade Health Test. The test covered a variety of major health areas, such as food and nutrition, dental care, first aid, safety, personal care, growth and development, mental health, and environmental health. Most of the test dealt with knowledge of health facts, but there were also groups of items concerning habits and attitudes.

A major purpose of the Health Test was to gather hitherto unavailable information. Historically, little has been known at the state level about what North Carolina's third-grade teachers have been teaching in regard to health. As a consequence, little has been know about third-graders' understanding and use of health principles. The test was an attempt to provide some baseline information about the latter.

The Health Test was experimental in several ways. First, there were no appropriate, nationally standardized health tests available at the third-grade level, so the health consultants in the Division of Health, Safety, and Physical Education of the State Department of Public Instruction had to develop their own test without the benefit of a model.

Second, the health consultants could only assume that material the state's third-grade teachers are generally teaching in health and had to design the test based on those assumptions. The reasons for uncertainty are many: there is no statewide detailed health curriculum guide; there is no basal health text below grade four; and teachers are not required to teach health in the third grade.

The Division of Health, Safety, and Physical Education considers this third-grade Health Test to be a preliminary, information-gathering step, which should eventually assist in the development of a comprehensive health program for North Carolina public schools.

Results of a Validity Study on the Health Test

Any test, experimental or otherwise, is open to such questions as: "How valid is this test for the students who are to take it?" "Does this test actually measure what it claims to measure?" "Are the items on the test relevant to the tested students?" "Are the main points on the test important, and are they being taught in the schools?" "Are the items good measures of the general objectives of the tests?"

In an effort to answer these questions, approximately 30 of the state's third-grade teachers, recommended as outstanding by their local superintendents, were asked by the Division of Research to review the Health Test and complete a validity questionnaire concerning the test.

Although the number of teachers was small, they represented all three regions of the state, and their responses to the validity questionnaire may tell something about the teaching of health in North Carolina and provide a better base for interpreting the Health Test results.

Importance

The teachers were asked to rate the importance for third-graders of the eight areas on the Health Test: food and nutrition, dental care, first aid, safety, personal care, growth and development, mental health, and environmental health. The respondents were given three options to choose from: "very important," "somewhat important," and "not very important." All of the areas were judged by at least 70 percent of the teachers to be important for third-graders. The ranking of the areas' importance, based on the percentage of teachers choosing the "very important" response, is shown in Table 8 below.

TABLE 8

RANKING OF IMPORTANCE OF EIGHT HEALTH AREAS ACCORDING TO A SAMPLE OF THIRD-GRADE TEACHERS

Rank	Area	Percent of Teachers Indicating the Area to be Very Important
1	Safety	96%
2	Personal Care	93%
2	Dental Care	93%
3	Mental Health	89%
3	Food and Nutrition	89%
4	Growth and Development	82%
4	Environmental Health	82%
5	First Aid	70%

Areas Taught

The respondents were asked to rate each health area as to whether it is being taught to their own students. If the teachers were in a team-teaching situation, they were told to indicate whether other team members teach the area. There were three possible responses: (1) "Yes, this area of health/safety is taught to my students;" (2) "This area is taught to some degree, but is not covered extensively in the curriculum;" (3) "No, this area is not covered in the curriculum."

A majority of the responding teachers chose the first option for all the areas except first aid and mental health. In those two areas, a majority of the teachers chose the second response. Table 9 below shows the eight areas ranked by the number of sample teachers who cover them. The percentages shown are the proportions of the teachers who chose the first response. ("Yes, this area of health/safety is taught to my students.")

TABLE 9

RANKING OF EIGHT HEALTH AREAS BY NUMBER OF SAMPLE THIRD-GRADE TEACHERS TEACHING THEM

Rank	Area	Percent of Teachers Indicating that They Teach the Area to Their Students
1	Dental Care	93%
2	Personal Care	89%
3	Food and Nutrition	85%
4	Safety	82%
5	Environmental Health	63%
6	Growth and Development	56%
7	Mental Health	37%
8	First Aid	30%

District Curriculum

A rating was obtained on whether each health area is generally covered in the curriculum throughout the local school systems of the responding teachers -- regardless of whether the teachers personally taught the area. The three response options were: (1) "Yes, this health/safety area is generally taught." (2) "No, this health/safety area is not generally taught." (3) "I do not know."

All of the eight areas except first aid were rated by a majority of the teachers as being generally covered in the local curriculum of the school system. Table 10 below provides a ranking of each area according to the percent of teachers stating that the area is generally taught throughout their local school system.

TABLE 10

RANKING OF HEALTH AREAS BY COVERAGE IN DISTRICT CURRICULUM, AS ESTIMATED BY A SAMPLE OF THIRD-GRADE TEACHERS

Rank	Area	Percent of Teachers Indicating that the Area Is Covered in the District Curriculum
1	Personal Care	96%
1	Dental Care	96%
2	Safety	89%
2	Food and Nutrition	89%
3	Environmental Health	74%
4	Growth and Development	68%
5	Mental Health	56%
6	First Aid	40%

It is striking that mental health, ranked chird in importance by the sample teachers, is ranked next-to-last according to whether it is taught by these teachers and whether it is included in the district curriculum. Also, the area of safety, which they ranked most important, is apparently not emphasized as much as other areas in their classes or in their districts' curriculum.

Quality of Test Items

For the purposes of this rating, the eight health areas were broken down into twelve subareas: (1) food and nutrition knowledge; (2) food and nutrition habits; (3) dental care knowledge; (4) dental care habits; (5) first aid knowledge; (6) safety knowledge: (7) safety habits; (8) personal care habits; (9) growth and development knowledge; (10) growth and development habits; (11) mental health knowledge and attitudes; (12) environmental health knowledge. Each item was listed under one of these twelve headings. (The item listings according to subarea are found in the Appendix.) Teachers were asked to judge the quality of each item as a measure of the subarea it was intended to represent. Their options for response were: (1) "A very good measure of the stated subarea;" (2) "Adequate or generally acceptable measure of the subarea;" (3) "A poor measure of the subarea."

All of the test items except one (Question 11, listed under growth and development knowledge) were considered by a majority of the teachers to be "very good measures." Question 11, which dealt with relative heights of eight-year-old boys and girls, was termed a very good measure by 41 percent of the teachers, an adequate measure by 48 percent of the teachers, and a poor measure by 11 percent of the teachers.

In analyzing this data, an average of the percentage of teachers choosing the first option ("a very good measure") was made across the items of each subarea, and a ranking was then made of the subareas according to the general quality of the items in each. The safety knowledge subarea, which is very large (18 items), has been divided into two parts for the purpose of this analysis. The ranking of subareas is shown in the following table.

TABLE 11

RANKING OF HEALTH SUBAREAS BY AVERAGE QUALITY OF ITEMS, AS RATED BY A SAMPLE OF THIRD-GRADE TEACHERS

Rank	Subarea	Average Percent of Teachers Rating Items in the Subarea As Very Good Measures
1	Food and Nutrition Habits	86%
1	Safety Knowledge (A)	86%
2	Environmental Health	83%
2	Safety Habits	83%
2	Dental Care Knowledge	83%
3	Dental Care Habits	82%
4	Personal Care Habits	80%
5	Growth and Development Habits	79%
6	Safety Knowledge (B)	77%
7	Food and Nutrition Knowledge	71%
8	First Aid Knowledge	67%
9	Growth and Development Knowledge	66%
10	Mental Health Knowledge and Attitudes	65%

The preceding results of the validity study have laid the groundwork for the following analysis of the Health Test results. The results will be presented in the following order: state results, results according

to race and sex, results according to family income and parental education level, results according to region. In studying the results, the reader may wish to refer to the actual test items, which are presented (along with the percentage of students choosing the right or desirable answer) in the Appendix. The reader is cautioned however, that several subareas contain only two or three items and that such a small number of items may not adequately measure those subareas.

State Results

Food and Nutrition Knowledge

Over half (54 percent) of the students correctly answered at least seven of the eight items related to food and nutrition knowledge. Almost one-fourth (23 percent) answered all eight items correctly. In food and nutrition knowledge, the item (Question 5) having the highest achievement was a question about the best foods for the body; 93 percent of the students chose the right answer. The lowest achievement on any nutrition knowledge item occurred when 53 percent of the students correctly decided that most fat people are not healthy (Question 40). Even on that lowest-achieved item, over half of the students chose the correct response.

Food and Nutrition Habits

There were three items on the Health Test related to food and nutrition habits. Seventy-nine percent of the students answered at least two of the three items in the desirable way, while 43 percent chose all three desired answers. Eighty-eight percent of the students stated that they usually eat breakfast (Question 44), 71 percent said they eat breakfast every morning (Question 60), and 57 percent stated they drink milk every day (Question 62).

Dental Care Knowledge

Over half (58 percent) of the students correctly answered at least five of the six items measuring dental care knowledge. Over one-fourth (28 percent) answered all six items correctly. The highest achievement was shown when 93 percent of the students selected the correct reason for brushing teeth (Question 18). The lowest achievement in this group of items occurred on a question about care of baby teeth, with 43 percent of the students answering correctly (Question 41).

Dental Care Habits

Seventy-two percent of the students selected desirable answers for at least three of the four items measuring dental care habits. Forty-four percent of the students answered all four items desirably. Virtually all (98 percent) of the students said they have their own toothbrush in response to Question 55. Seventy-five percent said they brushed their teeth that morning (Question 51). Seventy percent reported having been to the dentist since the end of the last school year (Question 53), while 63 percent stated they brush their teeth every day (Question 61).

First Aid Knowledge

Achievement on the two items measuring first aid knowledge was not quite as high as achievement on other knowledge items of the Health Test. Seventy-three percent of the students correctly answered at least one of the two items and 16 percent answered both correctly. Sixty-seven percent of the students knew how to clean a cut finger (Question 33), but only 22 percent knew how to care for a person who is about to faint. (Question 4).

It should be noted that first aid received the lowest ratings on the validity questionnaire in terms of importance for third graders and whether this area was taught by the responding teachers or covered in the district curriculum.

Safety Knowledge

There were two groups of nine items each which measured knowledge of safety principles. In the two groups of items, 20 percent and 30 percent of the students answered at least eight of the nine items correctly. Four percent and eight percent of the students answered all nine of the items correctly in the two groups of items. Some of the highest-achieved items were two yes-or-no questions, both of which were correctly answered by 93 percent of the students. Those two items dealt with taking medicine (Question 21) and using a plastic bag as a toy (Question 22). Much lower achievement was shown on items relating to swimming alone (Questions 17 and 23) and to kite safety (Question 25). Question 17 was answered correctly by 35 percent of the students, Question 23 by 45 percent, and Question 25 by 36 percent.

Safety Habits

Safety habits were measured by two items on the Health Test. One of the safety habit items concerned cleaning the ears (Question 64, with 82 percent choosing the desirable answer). The other item, Question 65, dealt with traffic signals and was answered desirably by 89 percent of the students. Three-fourths of the students answered both items in the preferred way.

Personal Care Habits

There were two items relating to personal care habits, with more than three-fourths (78 percent) giving the desired answer for both. On an item asking how often the students took baths, 81 percent answered almost

every day, while 18 percent said about once a week (Question 66). On the second item, 96 percent of the students said they use soap to wash their hands and faces (Question 56).

Growth and Development Knowledge

Twenty-two percent of the students correctly answered at least five of the six items used to measure knowledge of growth and development, but just one percent correctly answered all six items. The highest percentage of students correctly responding to any of these six items was 94 percent (on Question 39, linking cigarette smoking and heart disease). The lowest achievement on the entire Health Test occurred on Question 11, which dealt with relative heights of eight-year old boys and girls; only six percent of the students responded correctly. As mentioned in the section on Quality of Test Items, Question 11 received the worst quality rating of any item on the Health Test.

Growth and Development Habits

Three items pertained to habits of growth and development. Here the level of achievement was not as high in growth and development habits as it was in personal care habits, food and nutrition habits, and safety habits. Fifty-seven percent answered at least two of the three items in the desirable way, while 17 percent answered all three desirably. In response to Question 45, 67 percent of the students said they do not usually stay up after 10:00 at night. On Question 63, 57 percent stated that they play outdoors every day. Forty-one percent indicated they are not often tired at school (Question 46).

Mental Health Knowledge and Attitudes

In the field of mental health knowledge and attitudes, 39 percent chose the desirable responses to at least eight of the ten questions,

18 percent answered in the preferred way to at least nine, and four percent gave the desirable response to all ten. Only one of the ten items (Question 30) dealt with mental health knowledge; the other nine covered mental health attitudes.

The highest achievement in this group of items occurred on Question 58, which related to friendliness and to which 86 percent of the students gave the desirable answer. The lowest achievement was on Question 52, which asked, "Are you a leader in sports and games?" Thirty percent gave the desired positive response to that question.

Environmental Health Knowledge

The two items (Questions 12 and 37) measuring environmental health knowledge dealt with air and water pollution. Ninety-seven percent answered at least one of the two items correctly, while 80 percent answered both correctly. Both items were correctly answered by an almost equal percentage of students (88 percent and 89 percent).

Results According to Race and Sex

On the Health Test, white students generally answered more items correctly than black students. The racial differences were substantial in some areas, such as food and nutrition knowledge and habits, dental care knowledge, safety habits, and environmental health knowledge. The racial differences were somewhat smaller in the areas of dental care habits, first aid knowledge, safety knowledge, personal care habits, growth and development knowledge and habits, and mental health knowledge and attitudes.

White females scored higher than any other race-by-sex group on all but one of the sets of items related to habits. The only habit-related set where white females were exceeded was that of food and

nutrition habits, where white males scored slightly higher. The general pattern of achievement on the habit-related item groups was as follows: white females first, white males second, black females third, and black males fourth.

There were no consistent race-by-sex differences across the groups of items which measured knowledge.

Results According to Family Income and Parental Education Level

For most areas on the Health Test, the greater the family income, the better the students' achievement. Personal habits and growth and development habits were the only fields in which students' achievement was not clearly associated with family income.

The degree of the parents' formal education was closely related to the students' performance in all the Health Test subareas except personal care habits, growth and development habits and knowledge, and mental health knowledge and attitudes.

Results According to Region

The regional differences in achievement were generally slight when compared to the differences indicated for race, race-by-sex family income, and parental education. However, the Mountain region generally performed best in terms of percentage of correct answers. In second place was the Piedmont region, followed by the Coastal Plains region. On two groups of items (personal care habits and growth and development habits), the trend was clearly reversed: the Coastal Plains achieved highest, then the Piedmont, then the Mountains. It is interesting to note that those two sets of items were the only sets in which achievement did not seem to be directly associated with family income.

Summary and Discussion

No overall statements can be made about the acceptability of performance on this Health Test, because of two main factors: (1) the experimental nature of the test; (2) the absence of solid criteria for judging good performance on this test. The most that can safely be said is that performance was uneven, i.e., that more students chose the correct answers on some sets of items than on others.

One possible explanation for this varying achievement could be that some parts of the test were more difficult or less related to the students' experiences than others. Another possible explanation (the one most stressed by the health consultants in the Division of Health, Safety, and Physical Education) is that the teaching of health to third graders is itself inconsistent and fragmented. Thus, the health consultants wish to create a comprehensive, unified program of health teaching in North Carolina. According to these consultants, such a program would not emphasize the learning of fragmented bits of knowledge, but would focus instead on values clarification, decision making, and self-actualization in all the areas of health.

Regardless of the reason for the varying performance on the areas measured, it is generally felt by the health consultants that the present Health Test results will serve as a basis for future comparisons. As the assessment process continues in future years, it is likely that definite criteria for acceptable performance will be developed and that the measurement of students' health knowledge and habits will be increasingly refined and improved.

HIGHLIGHTS OF RESULTS FROM PHYSICAL EDUCATION ASSESSMENT

Softballs and balance beams replaced papers and pencils in the Physical Education Assessment, which was part of the N. C. State Assessment of Educational Progress in April, 1974. Approximately 2,500 randomly selected third graders participated in five motor performance events: Shuttle Run, Wall Rebound, Standing Broad Jump, Balance Walk, and Throw for Distance.

The purpose of the Physical Education Assessment was to determine the present achievement of North Carolina third graders in several physical activities without interpreting certain achievement levels satisfactory and others unsatisfactory. For this reason, the results presented here do not contain judgments about acceptability of performance.

- No student took more than 21 seconds to do the Shuttle Run, which consisted of running back and forth for two complete trips between two marks 30 feet apart. The average time for completion of this activity was 12.9 seconds.

- In the Wall Rebound, which was designed to measure eye-hand coordination and the ability to throw and catch, the average number of successful throws was 8.8 out of a possible 10. In contrast, the average number of successful catches out of a possible 10 was 6.1. Fifty-three percent made the maximum possible number of successful throws, while only 24 percent made the maximum possible number of successful catches. Half of the students used their right hand in throwing, while 40 percent used both hands. The most popular throwing style was overhand, used by 74 percent of the students.

- In the Standing Broad Jump, the average length jumped was 50.4". Forty percent of the students jumped somewhere between 51" and 60", and 39 percent reached a length of 41" to 50". No student jumped farther than 79", and only one percent jumped 30" or less.

- The Balance Walk assessed the ability to maintain balance while walking heel-to-toe on a 10' beam. The average achievement was 8.4 steps made before balance was lost. The maximum possible number of steps that was scorable on this test was 12, and 46 percent of the students had a score of 12 steps. However, the 20 percent who made from one to three correct steps tended to pull the average down.

- The average achievement in the Throw for Distance was 53.9', but there was a great deal of variation in students' performance in this activity. Throwing distance ranged from 9' to 128'.

- The Piedmont region ranked first in every activity but throwing in the Wall Rebound, in which the Piedmont ranked second after the Coastal Plains region. The Coastal Plains region attained second place in every activity except throwing in the Wall Rebound. The Mountain region was third place in every event.

- Males performed better than females in all five events.

- There were no consistent racial differences across the five events, but some interesting race-by-sex results occurred. White males performed best in three of the five events, while black males performed highest in the other two events. Black females came in last in two of the five events, while white females ranked last in the other three events. The most striking race-by-sex differences appeared in the Throw for Distance, in which black males threw the ball 74', white males 65', black females 46', and white females 35'.

- Children of high-income families (over $15,000) did better than children of medium-income families ($3,000-$15,000) or low-income families (under $3,000) in every event but the Throw for Distance. In that activity, students from low-income families threw the ball farther than students from the other two family income groups.

- Children whose parents had more education performed better than children of less-educated parents in all events except the Throw for Distance.

CHAPTER THREE: PHYSICAL EDUCATION ASSESSMENT

Assessments of educational achievement usually concentrate only on mental performance. The 1973-74 State Assessment of Educational Progress was different; it included the motor performance as well as the mental performance of North Carolina's third graders.

Motor performance was measured on the Physical Education Test, a test which was perhaps the most unique instrument used in the entire State Assessment. Softballs and balance beams replaced papers and pencils as third graders participated in a variety of physical activities.

The 2,500 children who took the Health Test (described in Chapter Two) also took the Physical Education Test. Both tests were given during the spring of 1974. As previously explained, the sample of 2,500 was randomly selected and is representative of the whole state and of the three geographic regions (Mountains, Piedmont, Coastal Plains). Both sexes were about evenly represented. The racial composition of the sample mirrored the racial composition of the state (approximately 70 percent white and 30 percent non-white).

Description of Physical Education Test

There were five events in the Physical Education Test: Shuttle Run, Wall Rebound, Standing Broad Jump, Balance Walk, and Throw for Distance. The purpose of the test was to determine the present achievement of North Carolina third graders in several physical activities without interpreting certain achievement levels to be satisfactory or unsatisfactory.

Since there are no national third-grade norms for motor performance

in these activities, it is not possible to make judgments about acceptability of performance by comparing the achievement of North Carolina's third graders to the achievement of third graders nationally. Furthermore, because data has never been collected before on the motor performance of the state's third graders, it is also impossible to compare the present performance of the sampled group with the previous achievement of North Carolina's third graders. No statewide standards for adequate motor performance have yet been established for this age level. Therefore, the results of the Physical Education Test will not be presented in terms of the acceptability of students' performance. It is hoped, however, that the information collected in this State Assessment will provide a baseline for future comparisons and the eventual establishment of acceptable performance standards.

When it was decided that physical education would be assessed as part of the 1973-74 State Assessment of Educational Progress, the Division of Health, Safety, and Physical Education (State Department of Public Instruction) initially sought a nationally standardized test which would be appropriate for third graders. The Division's consultants conferred with testing and physical education specialists, both within North Carolina and across the country, but were unable to find an appropriate test. They therefore had to develop their own experimental test with the help of such experts as Dr. Jack Keough of UCLA.

Table 12 on the following page presents the individual score card used to mark the performance of each of the 2,500 students participating in the Physical Education Test. As shown on the card, each of the activities involved a single score except for the Wall Rebound, which was

scored for four things: number of successful throws, number of successful catches, hand used for throwing, and style used for throwing.

TABLE 12

INDIVIDUAL SCORE CARD

Name Label

Test	Score
1. Shuttle Run (Nearest tenth second)	_____
2. Wall Rebound	
Number of Successful Throws	_____
Number of Successful Catches	_____

Circle One:	Hand	Style
	Right	Overhand
	Left	Underhand
	Both	Combination
	Combination	

3. Standing Broad Jump (Nearest full inch)	_____
4. Balance Walk (Number of successful steps)	_____
5. Throw for Distance (Nearest whole foot)	_____

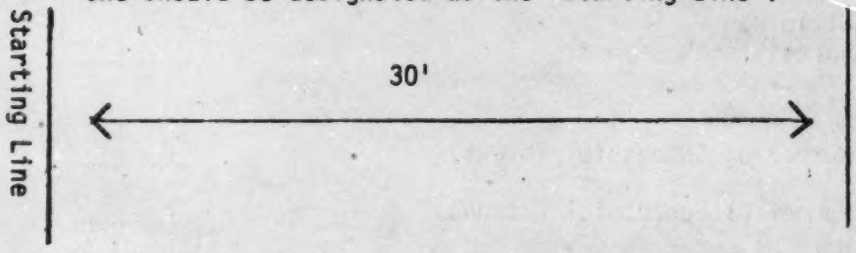
COMMENTS

The following pages contain a detailed description of each motor performance event (including purpose, equipment, directions, procedures, and scoring).

Shuttle Run

Purpose: To measure the ability to run rapidly between two given marks and to make quick stops and changes of direction.

Equipment: Stop watch, chalk or tape to make lines 30 feet apart. Two strips of tape should be placed on the floor 30 feet apart. One should be designated as the "Starting Line".



Directions: Explain to the students as a group what the task will be. They will run the distance between the two strips of tape (or chalk) <u>two</u> times (up and back, then up and back again). They should run as fast as they can and <u>not</u> slow down.

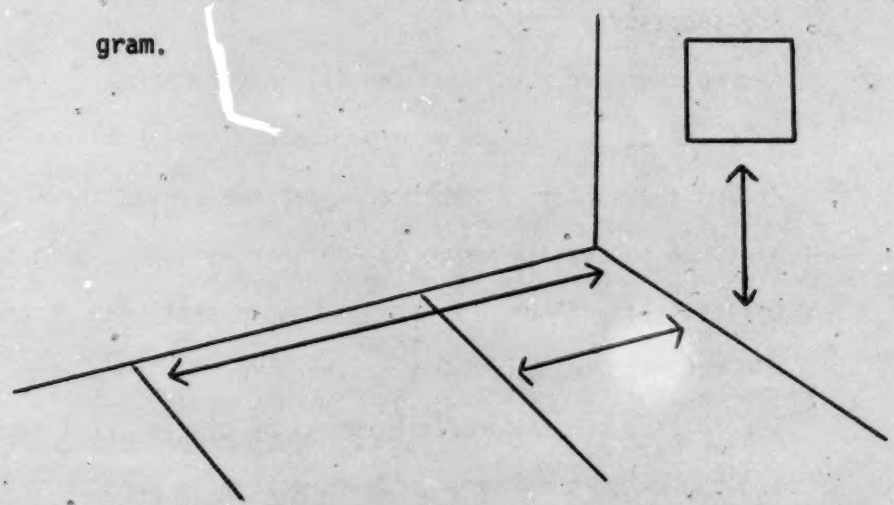
Procedures: Take the Score Card from the student. Then have the student stand behind the starting line. On the signal "Ready, Set - Go!", he should run the 30 feet and touch or step over the far line with one foot. He then should return to the starting line, touch or step over this line. Then he should repeat the cycle. Therefore, the student makes two complete trips for this test, running a total of 120 feet. As he makes the final return trip to the starting line, tell him not to slow down. An assistant should be stationed at the far line of tape or chalk to make sure that the student touches or steps over the line.

Scoring: Record the time of the two complete trips to the nearest tenth of a second on the Score Card. Give the Card back to the student and send him to the "Wall Rebound".

Wall Rebound

Purpose: To measure eye-hand coordination and the ability to throw and catch.

Equipment: 8-1/2 inch in diameter playground red rubber ball; wall space for a square with 3-foot sides (the bottom line of the square is 5 feet from the floor); two 8-foot lines of tape or chalk on the floor - one 4 feet away and one 8 feet away from the wall. It should be set up as described in the following diagram.



Directions: Explain that the student is to stand behind the far line (8 feet from the wall). He is to throw the ball against the wall so that it hits inside the box on the wall. Then he must catch the ball after it bounces off the wall before it

hits the floor. He must stand behind the 8-foot line to throw, but he may run toward the wall as far as the closer line (4 feet from the wall) in order to catch the ball before it hits the floor. He may throw the ball in any way he likes. Remember, he must catch the ball before it hits the floor. He will get 10 throws.

Procedure: Each student should be allowed three practice throws before beginning the official 10 throws. Then stand the student behind the 8-foot line. Remind him that he can throw the ball in any way he chooses against the wall so that it hits the box. Then he must catch it before it hits the floor (on the rebound). Give each student 10 throws. One assistant should count the successful catches, while the station master counts the successful throws.

Scoring: Record the number of good throws. A good throw is one that hits inside the box or on a perimeter line on the wall.

Record the number of successful catches behind the 4-foot line. A successful catch is one that is caught before the ball hits the floor. A catch is successful even if the ball did not hit the square box on the throw.

Record also how the student throws by circling the appropriate choice on the Score Card. Record both Hand and Style of throw. Give the student his Score Card and send him to the "Standing Broad Jump".

Standing Broad Jump

Purpose: To measure leg strength and the ability to jump horizontally from a standing position.

Equipment: Mat marked with a take-off line one foot from the edge; a measuring tape or two yardsticks put end-to-end.

Directions: Tell the student to stand behind the take-off line with both feet on the mat. He takes a preliminary position of bending his knees, swinging his arms back and forth (demonstrate the position for the student). Then he should jump forward as far as possible. He must take-off with both feet. He will get three tries. The best jump will be recorded.

Procedure: Take the Score Card from the student. Stand him behind the take-off line. Make sure the student's toes are behind the take-off line. Have him bend his knees and swing his arms as directed. Tell him to jump when he is ready. Give three successive trials.

Make sure take-off is with both feet. If a student falls back upon landing, do not count the jump but give him an additional jump. However, he should not get more than 6 jumps all together.

Scoring: Record the distance of the best (longest) jump in which the child does not fall. The jump should be measured from the back edge of the take-off line to the nearest heel contact with the mat. If the student falls on all tries measure the distance from the part of the body nearest the take-off line.

Distance is measured to the nearest full inch. After recording the score on the Score Card, return it to the student and send him to the "Balance Walk".

Balance Walk

Purpose: To assess the ability to maintain dynamic balance while walking a beam in heel-to-toe fashion.

Equipment: A balance beam 2" x 4" x 10' (4 to 5 inches high).

Directions: Explain that the student must walk on the balance beam, beginning at one designated end. He must walk in a heel-to-toe fashion; the heel of the foot in front must touch the toe of the foot behind. He will walk until he loses his balance. He may hold his hands and arms in any position he prefers.

Procedure: Take the Score Card from the student. Have the child put one foot on the end of the beam. Then direct him to begin walking the beam, being sure to touch his heels to his toes. The heel and toe must touch on the beam.

Scoring: Count the number of heel-to-toe steps taken before he loses his balance. The student must make a successful heel-to-toe touch in order to count the step as successful. Otherwise, do not count the step. Do not count the first placement of the foot on the end of the beam as step one. The first heel-to-toe is step one. Discontinue when the student loses his balance. The maximum number of successful steps is twelve, so that the possible score ranges from 0 to 12.

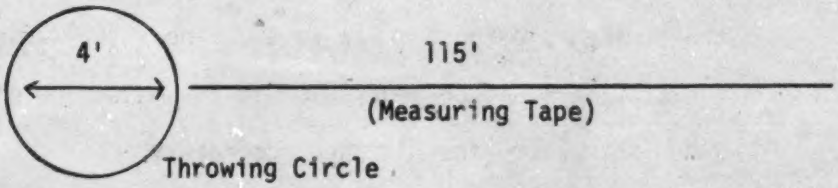
Return the Score Card to the student and send him to the "Throw for Distance" (softball throw).

Throw for Distance

Purpose: To measure visual-motor coordination and arm strength.

Equipment: 12-inch circumference soft softball, tape measure at least 100 feet long, two stakes with 15-foot string for marking and measuring, jump ropes for making a 4-foot circle.

Use the rope to make a 4-foot diameter circle in which the student will stand to throw the softball. Mark off a straight line out from the edge of the throwing the softball. Mark off a straight line out from the edge of the throwing circle with the measuring tape. If you only have a 100-foot tape, mark off with additional tapes 15 to 25 additional feet. This is necessary in case some students are able to throw farther than 100 feet. See diagram.



Throwing Circle

Directions: Explain to the student that the purpose of this item is to see how fa he can throw the ball. But he must throw it <u>overhand</u> (demonstrate style of throwing). The ball should be thrown in the direction of the measuring tape. The throw must be made from a stationary position within the throwing circle, but the rear foot is permitted to come forward with the throw. The front foot may be lifted from the ground in

preparation for the throw. Emphasize that throwing in a straight line in the direction of the tape will give them a longer distance.

Procedures: Take the Score Card from the student. Stand the child in the throwing circle and direct him to throw the ball overhand as far as he can in the direction of the measuring tape. He must not leave the throwing circle. Give each student three throws. Two assistants should be stationed in the field (one on either side of the measuring line) to retrieve softballs and return them to the station master.

Scoring: A stake should be put in the ground where the ball first lands (touches the ground). Two assistants should be stationed in the field for the purpose of placing the stake where the ball lands. They should be especially careful to place the stake accurately. The 15-foot string attached to the stake should be carried to the measuring line, so that the string is perpendicular to the line. The string from the stake must be perpendicular to the measuring line in order to measure the distance accurately.

Record the score which is the best of three throws. Distance is recorded to the nearest foot.

State Results

The Shuttle Run, as indicated earlier, consisted of running back and forth for two complete trips between two marks 30 feet apart. The state average for completion of the Shuttle Run was 12.9 seconds.

The Wall Rebound was designed to measure eye-hand coordination and the ability to throw and catch. The average number of successful throws in the Wall Rebound was 8.8 out of a possible 10. In contrast, the average number of successful catches out of a possible 10 was 6.1. Fifty-three percent made the maximum possible number of successful throws, while only 24 percent made the maximum possible number of successful catches. Half of the students used their right hand in throwing, while 40 percent used both hands. The most popular throwing style was overhand, used by 74 percent of the students.

In the Standing Broad Jump, the average length jumped was 50.4". Forty percent of the students jumped somewhere between 51" and 60", and 39 percent reached a length of 41" to 50". No student jumped farther than 79", and only one percent jumped 30" or less.

The Balance Walk assessed the ability to maintain balance while walking heel-to-toe on a 10' beam. The average achievement was 8.4 steps made before the balance was lost. The maximum possible number of steps that was scorable on this test was 12, and 46 percent of the students had a score of 12 steps. However, the 20 percent who made from one to three correct steps tended to pull the average down.

The average achievement in the Throw for Distance was 53.9', but there was a great deal of variation in students' performance in this activity. Throwing distance ranged from 9' to 128'.

Results According to Race and Sex

Boys averaged higher than girls in all five events. There were no consistent racial differences across the five events, but some interesting race-by-sex results occurred.

Black males and white males alternated with each other for first and second place in every event except the Balance Walk, in which white males ranked first (8.8 correct steps), white females second (8.5 steps), black males third (8.1 steps), and black females fourth (7.8 steps).

White males performed best in three events (Shuttle Run, Wall Rebound, and Balance Walk), while black males performed highest in the other two events (Broad Jump and Throw for Distance). Black females came in last in two events (Shuttle Run, Balance Walk), and white females ranked last in the other three events (Wall Rebound, Broad Jump, and Throw for Distance).

The most striking race-by-sex difference appeared in the Throw for Distance, in which black males, on the average, threw the ball 74', white males 65', black females 46', and white females 35'.

Table 13 shows the ranking, the average, and the standard deviation of each race-by-sex category on each motor performance event.

KEY TO TABLES 13, 14, 15, AND 16

Category	Symbol or Abbreviation	Meaning
Region	C. P.	Coastal Plains
	Pied.	Piedmont
	Mtn.	Mountain
Race by Sex	BM	Black Male
	BF	Black Female
	WM	White Male
	WF	White Female
Family Income	H	High (over $15,000)
	M	Medium ($3,000-$15,000)
	L	Low (under $3,000)
Parental Education	Level 1	Both parents less than 8th grade
	Level 2	At least one parent more than 8th grade but less than high school
	Level 3	At least one parent finished high school
	Level 4	At least one parent had some education beyond high school

TABLE 13

RANK, MEAN, AND STANDARD DEVIATION FOR EVERY RACE-BY-SEX CATEGORY ON EACH MOTOR PERFORMANCE EVENT

Event	Rank	Race -by-Sex Category	Mean	S. D.
Shuttle Run	1	WM	12.3 sec.	1.4 sec.
	2	BM	12.5 sec.	1.7 sec.
	3	WF	13.2 sec.	1.8 sec.
	4	BF	13.7 sec.	1.9 sec.
Wall Rebound: Throw	1	WM	9.4 throws	1.2 throws
	2	BM	9.3 throws	1.7 throws
	3	BF	8.6 throws	2.1 throws
	4	WF	8.0 throws	2.3 throws
Wall Rebound: Catch	1	WM	7.8 catches	2.7 catches
	2	BM	7.7 catches	2.9 catches
	3	BF	5.2 catches	3.5 catches
	4	WF	4.0 catches	3.5 catches
Broad Jump	1	BM	54.4 in.	8.8 in.
	2	WM	52.0 in.	8.7 in.
	3	BF	48.9 in.	7.9 in.
	4	WF	47.3 in.	8.6 in.
Balance Walk	1	WM	8.8 steps	4.0 steps
	2	WF	8.5 steps	4.1 steps
	3	BM	8.1 steps	4.2 steps
	4	BF	7.8 steps	4.3 steps
Throw for Distance	1	BM	74.0 ft.	18.2 ft.
	2	WM	65.8 ft.	16.0 ft.
	3	BF	46.0 ft.	12.9 ft.
	4	WF	35.0 ft.	10.6 ft.

Results According to Family Income Level

Children of high-income families (over $15,000) did better than children of medium income ($3,000-$15,000) or low-income families (under $3,000) in every event but the Throw for Distance. In that activity, students from low-income families threw the ball farther than students from the other two family-income groups.

The personnel of Division of Health, Safety, and Physical Education noted that the complicated administration of the Throw for Distance has raised some questions concerning the validity and usefulness of that event. The unusual results of that event may be considered slightly questionable in light of the difficulty found in administering it.

Table 14 indicates the rank, the average, and the standard deviation of each family income group on all the activities on the Physical Education Test.

Results According to Parental Education Level

Third graders' performance on the test was also analyzed according to the amount of formal education the students' parents had obtained. There were four parental education levels used: (1) both parents completed less than eighth grade; (2) at least one parent completed more than eighth grade but did not complete high school; (3) at least one parent finished high school; (4) at least one parent had some education beyond high school.

In this analysis, it was found that children whose parents had more education generally performed better in all the events except the Throw for Distance. (See the comment above concerning the Throw for Distance.)

Table 15 presents the results according to parental education level.

TABLE 14

RANK, MEAN, AND STANDARD DEVIATION FOR EVERY FAMILY INCOME LEVEL ON EACH MOTOR PERFORMANCE EVENT

Event	Rank	Family Income Level	Mean	S. D.
Shuttle Run	1	H	12.3 sec.	1.3 sec.
	2	M	12.9 sec.	1.7 sec.
	3	L	13.3 sec.	2.2 sec.
Wall Rebound: Throw	1 (Three-Way Tie)	H	8.8 throws	2.0 throws
		M	8.8 throws	1.8 throws
		L	8.8 throws	2.0 throws
Wall Rebound: Catch	1	H	6.5 catches	3.7 catches
	2 (Two-Way Tie)	M	6.1 catches	3.6 catches
		L	6.1 catches	3.5 catches
Broad Jump	1	H	52.8 in.	8.8 in.
	2	L	50.6 in.	9.7 in.
	3	M	50.0 in.	8.8 in.
Balance Walk	1	H	9.6 steps	3.6 steps
	2	M	8.4 steps	4.2 steps
	3	L	7.9 steps	4.3 steps
Throw for Distance	1	L	59.6 ft.	21.8 ft.
	2	M	53.0 ft.	20.6 ft.
	3	H	51.8 ft.	21.1 ft.

TABLE 15

RANK, MEAN, AND STANDARD DEVIATION FOR EVERY PARENTAL EDUCATION LEVEL ON EACH MOTOR PERFORMANCE EVENT

Event	Rank	Parental Education Level	Mean	S. D.
Shuttle Run	1	Level 4	12.4 sec.	1.6 sec.
	2	Level 3	12.8 sec.	1.5 sec.
	3	Level 2	13.1 sec.	2.1 sec.
	4	Level 1	13.4 sec.	1.7 sec.
Wall Rebound: Throw	1 (Three-Way Tie)	(Level 4)	8.8 throws	1.9 throws
		(Level 3)	8.8 throws	1.8 throws
		(Level 2)	8.8 throws	1.9 throws
	2	Level 1	8.7 throws	2.0 throws
Wall Rebound: Catch	1	Level 4	6.5 catches	3.6 catches
	2	Level 3	6.2 catches	3.5 catches
	3	Level 2	6.1 catches	3.6 catches
	4	Level 1	6.0 catches	3.6 catches
Broad Jump	1	Level 4	52.5 in.	8.7 in.
	2	Level 3	50.1 in.	8.3 in.
	3	Level 1	49.9 in.	9.9 in.
	4	Level 2	48.5 in.	8.8 in.
Balance Walk	1	Level 4	9.1 steps	3.9 steps
	2	Level 3	8.6 steps	4.0 steps
	3	Level 1	8.1 steps	4.3 steps
	4	Level 2	8.3 steps	4.0 steps
Throw for Distance	1	Level 1	57.5 ft.	21.2 ft.
	2	Level 2	55.7 ft.	21.2 ft.
	3	Level 3	53.3 ft.	20.9 ft.
	4	Level 4	51.6 ft.	20.9 ft.

Results According to Region

The Piedmont region ranked first in every activity but throwing in the Wall Rebound, in which the Piedmont ranked second after the Coastal Plains. The Coastal Plains region attained second place in every activity except throwing in the Wall Rebound. The Mountain region was third place in every event. In Table 16 are found the comparative results of the state and geographic regions.

TABLE 16

REGIONAL MEANS AND STANDARD DEVIATIONS COMPARED
TO STATE MEAN AND STANDARD DEVIATION
ON EACH MOTOR PERFORMANCE EVENT

Event	Rank	Geographic Area	Mean	Standard Deviation
Shuttle Run	1	Pied.	12.7 sec.	1.8 sec.
	2	C. P.	13.0 sec.	1.7 sec.
	3	Mtn.	13.1 sec.	1.5 sec.
	-	STATE	12.9 sec.	1.7 sec.
Wall Rebound: Throw	1	C. P.	8.9 throws	1.9 throws
	2	Pied.	8.8 throws	1.9 throws
	3	Mtn.	8.6 throws	2.0 throws
	-	STATE	8.8 throws	1.9 throws
Wall Rebound: Catch	1	Pied.	6.3 catches	3.6 catches
	2	C. P.	6.1 catches	3.5 catches
	3	Mtn.	5.9 catches	3.6 catches
	-	STATE	6.1 catches	3.6 catches
Broad Jump	1	Pied.	51.4 in.	9.6 in.
	2	C. P.	49.9 in.	7.7 in.
	3	Mtn.	48.2 in.	8.9 in.
	-	STATE	50.4 in.	9.2 in.
Balance Walk	1	Pied.	8.7 steps	4.0 steps
	2	C. P.	8.2 steps	4.2 steps
	3	Mtn.	7.7 steps	4.4 steps
	-	STATE	8.4 steps	4.2 steps
Throw for Distance	1	Pied.	54.3 ft.	21.3 ft.
	2	C. P.	54.0 ft.	20.5 ft.
	3	Mtn.	52.0 ft.	20.9 ft.
	-	STATE	53.9 ft	21.0 ft.

Summary and Discussion

The results of the Physical Education Test have been presented by state, region, race, sex, family income level, and parental education level. Since no standards of acceptable motor performance were available for third graders, it was impossible to make evaluative judgments on whether North Carolina's third grade sample performed adequately on this test. The results of this test should be considered status information rather than evaluative information. However, these test results may assist in the eventual development of performance standards for North Carolina's third graders, so that such evaluation may be possible in the future.

In addition to the question about acceptability of performance, other questions were raised by the Physical Education Test. One such question is, "What is the relationship between students' motor performance and the presence or absence of physical education specialists in the schools?" The Division of Health, Safety, and Physical Education has the belief that the presence of a physical education specialist in a school is highly correlated with the quality of motor performance of the school's students. The Division would like this theory to be tested.

Another unanswered question is, "Why did the boys surpass the girls in every event on the Physical Education Test?" The director and consultants of the Division of Health, Safety, and Physical Education feel that sex-role stereotyping (along with some physiological differences) may have contributed to the disparity in achievement between boys and girls. More research needs to be done on this point.

Another question engendered by the Physical Education Test is, "What is the relationship between physical performance and academic performance in North Carolina's third graders?" According to the Division's theory, children who do well in motor performance also do well in academic skills. This hypothesis also calls for further research.

The Division of Health, Safety, and Physical Education feels a strong need to find answers to these and other questions. It plans to carry on further research, both within and outside of the State Assessment. The Division also encourages researchers from universities, local school systems, research laboratories, and other organizations to undertake studies in these areas and to share the resulting information.

APPENDIX

SCORE

SCHOOL CURRICULUM OBJECTIVE REFERENCED EVALUATION

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NORTH CAROLINA DEPARTMENT OF PUBLIC INSTRUCTION

N. C. Educational Assessment
Subject-Health/P.E.
Grade-03 Level-0 Form-1

PUPIL'S NAME _____

GRADE _____ DATE _____

SCHOOL _____

TEACHER'S NAME _____

OTHER INFORMATION 1 2 3 4 5 6 7 8 9

M

FIRST NAME

LAST NAME

H E A L T H T E S T

This is a test about health and safety. We want to learn about some of the things you know and do.

Section 1

In the first section, each question is followed by a set of answers. Only one answer is correct. Listen carefully while each question is read aloud. Then choose the best answer and darken the space by your answer with a heavy black pencil mark. For example, look at the numbers below. The space beside the one has been darkened.

(A) 0
1
(C) 2

See how the mark fills the whole space. Only one space should be marked for each question. If you change your answer, erase your first answer completely. Be sure to use a pencil.

Example

The animal that barks is

(A) the cat.
(B) the bird.
(C) the dog.

A dog barks, so (C) is the best answer. You should have marked answer (C) beside "the dog" like this .

1. The best breakfast for a nine-year-old might be

(A) coffee, rolls, and an orange.
(B) cake, milk, and an orange.
87.5% (C) an orange, cereal, and milk.

2. Foods that help to build strong teeth are

88.4% (A) cereals and fruits.
(B) coffee and pie.
(C) soft drinks and sweet buns.

3. To be healthy

(A) eat your food quickly.
(B) eat a great deal of food.
72.4% (C) chew your food slowly.

4. If a person turns pale and is about to faint, make him sit down and

22.3% (A) bend his head forward toward his knees.
(B) give him a glass of water.
(C) rub his wrists.

5. The best foods for your body are

(A) pickles, candy, and cake.
92.8% (B) milk, fruit, vegetables, and eggs.
(C) soft drinks, white bread, and white rice.

6. If a stranger asks you to take a ride with him, you should

(A) thank him when you get in.
87.2% (B) say "No Thanks" and not take a ride.
(C) be very polite when you are riding with him.

7. Johnny was offered a piece of candy by a nice-looking man he did not know. Johnny should

(A) thank the man.
(B) share the candy with the man.
86.2% (C) not take the candy.

8. Ears should be

(A) cleaned out with a hairpin.
47.3% (B) cleaned out with a washcloth.
(C) cleaned daily with eardrops.

9. Mary wants to be thinner and still healthy. She should

(A) eat carrots and apples in place of pie.
83.9% (B) eat more candy, bread, and cake.
(C) not eat any breakfast.

10. Each nine-year-old boy should

(A) weigh seventy-five pounds.
38.6% (B) have his own way of growing.
(C) be about the same size.

11. Around eight years of age

(A) boys are taller than girls.
(B) boys and girls are about the same height.
5.8% (C) girls are taller than boys.

12. Lakes and rivers are polluted by

(A) noise.
88.1% (B) trash.
(C) fish.

13. When pulling an electric cord out of the wall, you should

84.2% (A) pull it out by the plug.
(B) jerk it out by pulling on the cord.
(C) wet your hands before pulling out the cord.

14. When you ride your bike, a traffic signal with a flashing red light means you should

(A) be ready to stop if a car is coming.
(B) slow down.
67.0% (C) stop even if there are no cars.

15. When handing scissors or a knife to another person, you should

(A) hand it point first.
64.8% (B) hand it handle first.
(C) hand it with the point up.

16. The best time to brush your teeth is

(A) before a meal.
89.0% (B) after a meal.
(C) when you feel like it.

17. If you are a good swimmer, it is all right to swim alone

(A) always.
(B) sometimes.
35.4% (C) never.

18. You should brush your teeth to

(A) straighten your teeth.
(B) make your teeth harder.
92.8% (C) help keep your teeth from decaying.

19. When you swallow your food, it goes into your

(A) lungs.
88.2% (B) stomach.
(C) kidneys.

20. What should you do when you meet a dog that frightens you?

(A) Keep walking.
59.3% (B) Start running.
(C) Hide behind something.

Section 2

In section 2 each sentence can be answered by marking either "Yes" or "No." You must decide if the sentence is true or false. If the sentence is true, black in the space (A) beside "Yes." If the sentence is not true, black in the space (B) beside "No."

Listen carefully while each sentence is read aloud and decide if the sentence is true or not. Then darken your answer.

Example

Some dogs bark.

(A) Yes
(B) No

Yes, some dogs bark, so you should have darkened the (A) beside "Yes" like this .

21. You should take medicine only when your parents give it to you.

93.2% (A) Yes
(B) No

22. A plastic bag is a good toy for your baby brother to play with.

(A) Yes
93.4% (B) No

23. It is safe to swim alone if you are a good swimmer.

(A) Yes
45.2% (B) No

24. It is safe to play in the street if you have someone looking for cars.

(A) Yes
66.0% (B) No

25. Kites should not be flown near electric wires.

36.4% (A) Yes
(B) No

26. If you meet a dog that frightens you, it is best to start running.

(A) Yes
70.8% (B) No

27. The food you eat goes down your windpipe into your lungs.

(A) Yes
68.8% (B) No

28. Eating the right kinds of foods helps you grow.

97.8% (A) Yes
(B) No

29. Play and work help you to be a healthy person.

86 5% (A) Yes
(B) No

30. When someone is tired, he may feel mean or angry.

60.4% (A) Yes
(B) No

31. Outdoor play helps your body use the food you have eaten.

71.3% (A) Yes
(B) No

32. Beer and wine may keep the brain from doing its work.

80.3% (A) Yes
(B) No

33. If you cut your finger, you should wash it with soap and water.

66.5% (A) Yes
(B) No

34. You should have wet hands when using electrical equipment.

(A) Yes
87.4% (B) No

35. Black is the safest color for bicycle riders to wear at night.

(A) Yes
90.5% (B) No

36. The best time to brush your teeth is right before you eat.

(A) Yes
80.5% (B) No

37. Dirty air can help cause diseases of the lungs.

88.6% (A) Yes
(B) No

38. Bicycles, like cars, should keep to the right-hand side of the road.

76.9% (A) Yes
(B) No

39. Cigarette smoking can cause heart disease.

93.7% (A) Yes
(B) No

40. Most fat people are very healthy.

(A) Yes
52.5% (B) No

41. Baby teeth need very little care because they will soon fall out.

(A) Yes
42.7% (B) No

42. It is safe to use toothpicks or match sticks for removing wax from ears.

(A) Yes
87.0% (B) No

43. Teeth need care only when they hurt.

(A) Yes
61.1% (B) No

44. Do you usually eat breakfast?

88.0% (A) Yes
(B) No

45. Do you usually stay up after 10:00 at night?

(A) Yes
66.8% (B) No

46. Are you often tired at school?

(A) Yes
40.9% (B) No

47. Do you like the way you look?

70.4% (A) Yes
(B) No

48. Do your friends make fun of you?

(A) Yes
67.8% (B) No

49. Are you happy most of the time?

85.4% (A) Yes
(B) No

50. Are you the last chosen at games?

(A) Yes
74.8% (B) No

51. Did you brush your teeth this morning?

74.9% (A) Yes
(B) No

Section 3

In section 3 the questions are also answered by marking either "Yes" or "No." However, in this section there are no right or wrong answers. The right answer for you may be different from your neighbor's answer. Your honest answer is the right answer.

Listen carefully while each question is read aloud. Then darken your answer either (A) beside "Yes" or (B) beside "No."

Example

Do you have brown eyes?

(A) Yes
(B) No

If you do have brown eyes, you should have darkened (A) beside "Yes". If you have some other color of eyes, you should have darkened the (B) beside "No."

52. Are you a leader in sports and games?

29.7%(A) Yes
(B) No

53. Have you been to a dentist since school was over last year?

69.5%(A) Yes
(B) No

54. Do you often feel sad?

(A) Yes
60.3%(B) No

55. Do you have your own toothbrush?

97.8%(A) Yes
(B) No

56. Do you use soap to wash your face and hands?

96.1%(A) Yes
(B) No

Section 4

Each question in this section is followed by a set of answers. You must decide which is the right answer for you. The right answer for you may be different from someone else's answer.

Listen carefully while each question is read aloud. Then darken the space beside the honest answer for you.

Example

I eat meat

(A) every day.
(B) sometimes.
(C) never.

If you eat meat every day, you should have filled in (A). If you eat meat sometimes, but not every single day, you should have filled in (B). If you never eat meat at all, you should have filled in (C).

57. When someone is having a bad day, I like to

84.9%(A) help him.
(B) be very quiet.
(C) laugh at him.

58. With other children, I am usually

(A) unfriendly.
(B) mean.
(C) shy.
85.9%(D) very friendly.

59. I have

67.3%(A) lots of friends to play with.
(B) a few friends.
(C) one friend.
(D) nobody to play with.

60. I eat breakfast

71.4%(A) every morning.
(B) sometimes.
(C) never.

61. I brush my teeth

62.9%(A) every day.
(B) sometimes.
(C) never.

62. I drink milk

56.5%(A) every day.
(B) sometimes.
(C) never.

63. I play outdoors

56.8% (A) every day.
(B) sometimes.
(C) never.

64. I use a sharp, pointed object to clean out my ears

(A) most of the time.
(B) sometimes.
82.1% (C) never.

65. I wait for the traffic signal and look both ways before I cross the street

88.7% (A) most of the time.
(B) sometimes.
(C) never.

66. I take a bath

81.1% (A) almost every day.
(B) about once a week.
(C) never.

ITEM NUMBERS ON HEALTH TEST

LISTED ACCORDING TO HEALTH SUBAREA

Subarea	Item Numbers
Food and Nutrition Knowledge	1, 3, 5, 9, 19, 27, 28, 40
Food and Nutrition Habits	44, 60, 62
Dental Care Knowledge	2, 16, 18, 36, 41, 43
Dental Care Habits	51, 53, 55, 61
First Aid Knowledge	4, 33
Safety Knowledge (A)	6, 7, 8, 13, 14, 15, 17, 20, 21
Safety Knowledge (B)	22, 23, 24, 25, 26, 34, 35, 38, 42
Safety Habits	64, 65
Personal Care Habits	56, 66
Growth and Development Knowledge	10, 11, 29, 31, 32, 39
Growth and Development Habits	45, 46, 63
Mental Health Knowledge	30
Mental Health Attitudes	47, 48, 49, 50, 52, 54, 57, 58, 59
Environmental Health Knowledge	12, 37